



Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An automatic brake system for a vehicle comprising:  
a forward-monitoring unit that automatically detects an obstacle preceding the vehicle;  
and  
a control unit that varies an assumed steering characteristic of the vehicle dependent on manual steering operation in accordance with a condition of a path where the vehicle is traveling and executes an automatic braking control operation to avoid a potential collision with the obstacle, based on ~~a steering characteristics of the vehicle~~ the assumed steering characteristic.
2. (Cancelled).
3. (Cancelled).
4. (Currently Amended) The automatic brake system as claimed in claim 1, wherein:  
the control unit comprises:  
a steering ~~characteristics~~ characteristic determining unit that determines the ~~steering characteristics~~ assumed steering characteristic;  
a steering based avoidance determining unit that determines a possibility that the vehicle can avoid the potential collision with the obstacle by steering, passing on either side of left and right sides of the obstacle, based on the ~~steering characteristics~~ assumed steering characteristic determined by the steering ~~characteristics~~ characteristic determining unit;  
a brake-based avoidance determining unit that determines a possibility that the vehicle can avoid the potential collision with the obstacle by braking; and  
an automatic brake control determining unit that executes the automatic braking control operation to avoid the potential collision with the obstacle, based on the possibility determined by the steering-based avoidance determining unit and the possibility determined by the brake-based avoidance determining unit.
5. (Original) The automatic brake system as claimed in claim 4, wherein:

the control unit further comprises an avoidance space width detecting unit that detects widths of spaces on the sides of the obstacle; and

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the widths of the spaces on the sides of the obstacle.

6. (Original) The automatic brake system as claimed in claim 5, wherein:

the control unit further comprises a steering-based avoidance easiness determining unit that determines a degree of easiness with which the vehicle can avoid the potential collision with the obstacle by steering, based on the widths of the spaces on the sides of the obstacle and a width of the vehicle; and the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the degree of easiness.

7. (Currently Amended) The automatic brake system as claimed in claim 4, wherein:

the control unit further comprises a lateral displacement calculating unit that determines a lateral displacement required for a steering-based collision avoidance to each of the sides of the obstacle, based on the a-condition of the a-path where the vehicle is traveling detected by the forward-monitoring unit; and

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the lateral displacements determined ~~detected~~ by the lateral displacement calculating unit.

8. (Currently Amended) The automatic brake system as claimed in claim 7, wherein:

the control unit further comprises:

an avoidance space width detecting unit that detects widths of spaces on the sides of the obstacle; and

a steering-based avoidance easiness determining unit that determines a degree of easiness with which the vehicle can avoid the potential collision with the obstacle by steering, based on the widths of the spaces on the sides of the obstacle and a width of the vehicle;

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the degree of easiness with which the vehicle can avoid the potential collision with the obstacle by steering determined by the steering-based avoidance easiness determining unit; and

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the lateral displacements ~~determined detected~~ by the lateral displacement calculating unit, only when the possibility that the vehicle can avoid the potential collision with the obstacle by steering determined by the steering-based avoidance determining unit is positive for both sides of the obstacle.

9. (Currently Amended) The automatic brake system as claimed in claim 8, wherein:  
the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, only for a side of the obstacle where the lateral displacement ~~determined detected~~ by the lateral displacement calculating unit is smaller than on another side.

10. (Currently Amended) An automatic brake system for a vehicle comprising:  
forward-monitoring means for automatically detecting an obstacle preceding the vehicle; and

control means for varying an assumed steering characteristic of the vehicle dependent on manual steering operation in accordance with a condition of a path where the vehicle is traveling and executing an automatic braking control operation to avoid a potential collision with the obstacle, based on ~~a steering characteristics of the vehicle~~ the assumed steering characteristic.

11. (Withdrawn - Currently Amended) A method of controlling a braking operation of a vehicle, the method comprising:

automatically detecting an obstacle preceding the vehicle; and  
executing an automatic braking control operation to avoid a potential collision with the obstacle based on a steering characteristics of the vehicle, when the obstacle is detected.

12. (Currently Amended) An automatic brake system for a vehicle comprising:  
a forward-monitoring unit that automatically detects an obstacle preceding the vehicle, and a geometrical relationship among the vehicle, the obstacle and a path where the vehicle is traveling;

a control unit that varies an assumed steering characteristic of the vehicle dependent on manual steering operation in accordance with the condition of the path where the vehicle is

traveling and executes an automatic braking control operation to avoid a potential collision with the obstacle, based on ~~a steering characteristics of the vehicle~~ the assumed steering characteristic and the geometrical relationship; and

a brake control unit that generates a braking force according to the automatic braking control operation determined by the control unit.

13. (Cancelled).

14. (Currently Amended) The automatic brake system as claimed in claim ~~13~~ 12, wherein:

the control unit comprises a steering ~~characteristics~~ characteristic determining unit that determines the ~~steering characteristics dependent on manual steering operation~~ assumed steering characteristic, based on a degree of easiness with which the vehicle can avoid the potential collision with the obstacle by steering.

15. (Currently Amended) The automatic brake system as claimed in claim 14, wherein:

the steering ~~characteristics~~ characteristic determining unit determines the ~~steering characteristics dependent on manual steering operation~~ assumed steering characteristic in as with which a maximum steering angle is larger and a steering speed is faster, when the degree of easiness is higher; and

the steering ~~characteristics~~ characteristic determining unit determines the ~~steering characteristics dependent on manual steering operation~~ assumed steering characteristic in as with which a maximum steering angle is smaller and a steering speed is slower, when the degree of easiness is lower.

16. (Original) The automatic brake system as claimed in claim 14, wherein:

the control unit further comprises a steering-based avoidance easiness determining unit that determines the degree of easiness with which the vehicle can avoid the potential collision with the obstacle by steering, based on widths of spaces on sides of the obstacle and a width of the vehicle.

17. (Cancelled).

18. (Cancelled).

19. (Currently Amended) The automatic brake system as claimed in claim 12, wherein:

the control unit comprises:

a steering-~~characteristics~~ characteristic determining unit that determines the ~~steering characteristics~~ assumed steering characteristic;

a steering-based avoidance determining unit that determines a possibility that the vehicle can avoid the potential collision with the obstacle by steering, passing on sides of the obstacle, based on the ~~steering characteristics~~ assumed steering characteristic determined by the steering-~~characteristics~~ characteristic determining unit; and

an automatic brake control determining unit that determines the automatic braking control operation to avoid the potential collision with the obstacle, based on the possibility determined by the steering-based avoidance determining unit.

20. (Currently Amended) The automatic brake system as claimed in claim 12, wherein:

the control unit comprises:

a steering-~~characteristics~~ characteristic determining unit that determines the ~~steering characteristics~~ assumed steering characteristic;

a steering-based avoidance determining unit that determines a possibility that the vehicle can avoid the potential collision with the obstacle by steering, passing on either one of left and right sides of the obstacle, based on the ~~steering characteristics~~ assumed steering characteristic determined by the steering-~~characteristics~~ characteristic determining unit;

a brake-based avoidance determining unit that determines a possibility that the vehicle can avoid the potential collision with the obstacle by braking, based on the geometrical relationship; and

an automatic brake control determining unit that determines the automatic braking control operation to avoid the potential collision with the obstacle, based on the possibility determined by the steering-based avoidance determining unit and the possibility determined by the brake-based avoidance determining unit.

21. (Original) The automatic brake system as claimed in claim 20, wherein:

the automatic brake control determining unit determines to operate the braking force when the possibility determined by the steering-based avoidance determining unit and the possibility determined by the brake-based avoidance determining unit are both positive.

22. (Original) The automatic brake system as claimed in claim 20, wherein:

the control unit further comprises an avoidance space width detecting unit that detects widths of spaces on the sides of the obstacle; and

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the widths of the spaces on the sides of the obstacle.

23. (Original) The automatic brake system as claimed in claim 22, wherein:

the control unit further comprises a steering-based avoidance easiness determining unit that determines a degree of easiness with which the vehicle can avoid the potential collision with the obstacle by steering, based on the widths of the spaces on the sides of the obstacle and a width of the vehicle; and

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the degree of easiness.

24. (Currently Amended) The automatic brake system as claimed in claim 20, wherein:

the control unit further comprises a lateral displacement calculating unit that determines a lateral displacement required for a steering-based collision avoidance to each of the sides of the obstacle, based on the a-condition of the path where the vehicle is traveling detected by the forward-monitoring unit; and

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the lateral displacements determined ~~detected~~ by the lateral displacement calculating unit.

25. (Currently Amended) The automatic brake system as claimed in claim 24, wherein:

the control unit further comprises:

an avoidance space width detecting unit that detects widths of spaces on the sides of the obstacle; and

a steering-based avoidance easiness determining unit that determines a degree of easiness with which the vehicle can avoid the potential collision with the obstacle by steering, based on the widths of the spaces on the sides of the obstacle and a width of the vehicle;

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the degree of easiness with which the vehicle can avoid the potential collision with the obstacle by steering determined by the steering-based avoidance easiness determining unit; and

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the lateral displacements determined ~~detected~~ by the lateral displacement calculating unit, only when the possibility that the vehicle can avoid the potential collision with the obstacle by steering determined by the steering-based avoidance determining unit is positive for both sides of the obstacle.

26. (Currently Amended) The automatic brake system as claimed in claim 25, wherein:

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, only for a side of the obstacle where the lateral displacement determined ~~detected~~ by the lateral displacement calculating unit is smaller than on another side.

27. (Currently Amended) The automatic brake system as claimed in claim 20, wherein:

the control unit further comprises a lateral displacement calculating unit that determines a lateral displacement required for a steering-based collision avoidance to each side of the obstacle, based on the ~~a~~-condition of the path where the vehicle is traveling detected by the forward-monitoring unit;

the steering-based avoidance determining unit determines a required time for the lateral displacement, based on the ~~a~~-condition of the path where the vehicle is traveling detected by the forward-monitoring unit; and

the steering-based avoidance determining unit determines the possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the required time for the lateral displacement, a longitudinal distance between the vehicle and the obstacle, and a relative speed of the vehicle to the obstacle.

28. (Withdrawn) An automatic brake system for a vehicle comprising:

forward-monitoring means for automatically detecting an obstacle preceding the vehicle, and a geometrical relationship among the vehicle, the obstacle and a path where the vehicle is traveling;

control means for executing an automatic braking control operation to avoid a potential collision with the obstacle, based on a steering characteristics of the vehicle and the geometrical relationship; and

brake control means for generating a braking force according to the automatic braking control operation determined by the control means.

29. (Withdrawn) A method of controlling a braking operation of a vehicle, the method comprising:

monitoring a condition of a path where the vehicle is traveling, for detecting an obstacle preceding the vehicle;

detecting a geometrical relationship among the vehicle, an obstacle and the path, when the obstacle is detected;

determining a steering characteristics of the vehicle, based on the geometrical relationship and the change of the geometrical relationship;

determining a first possibility that the vehicle can avoid the potential collision with the obstacle by steering, based on the steering characteristics, the geometrical relationship and the change of the geometrical relationship;

determining a second possibility that the vehicle can avoid the potential collision with the obstacle by braking, based on the geometrical relationship and the change of the geometrical relationship; and

braking by a predetermined characteristics of braking operation suitable for a combined condition of the first possibility and the second possibility.